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Material Management And Organizational Productivity In Plastic Manufacturing Companies In Anambra State, Nigeria

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ABSTRACT

The study investigated the relationship between material management and organizational productivity in plastic manufacturing companies in Anambra State**,** Nigeria. Specifically the study investigated the relationship between material planning strategy, material handling, material procurement strategy and organizational productivity in Plastic manufacturing companies in Anambra State. Relevant conceptual, theoretical and empirical literature was reviewed taking cognizance of the problem and the hypotheses of the study. The study was anchored on Inventory Management Theory. Survey research design was adopted. The population of the study comprised 1648 employee in Plastic manufacturing companies in Anambra State, Nigeria, while the sample size consists of 321 employees in Plastic manufacturing companies. Borg and Gall was used to obtain the sample size. Face and content validity method was used to ensure validity of the instrument. The reliability of the instrument was achieved through test re-rest method. Simple percentage analysis was employed to answer the research questions. Pearson Product Moment Correlation Coefficient analysis was used in testing the hypotheses. It was discovered that. Material planning strategy has a significant relationship with organizational productivity in plastic manufacturing company. Material handling has a positive significant relationship with organizational productivity in plastic manufacturing company. Material procurement strategy has a positive significant relationship with organizational productivity in plastic manufacturing company in Anambra State. Therefore the study concluded that material management has a positive significant relationship with organizational productivity. The study recommends among others that there should be proper planning of material management practices right from the inception of project execution and Plastic manufacturing companies should prioritize in investing on modern systems of material handling equipment that will enhance efficiency and effectiveness production. Every organization should adopt the use of information technology, that will not only help in information sharing, but also help in proper procurement procedure of material from suppliers hence improving the material usage.

Keywords: Material Planning Strategy, Material Handling, Material Procurement Strategy and Organizational Productivity

INTRODUCTION

The expanding requirement for companies to offer items in a worldwide market based on cost and quality has generated the need to implement more productive warehousing methodologies. Material management has come to be perceived as an unmistakable crucial with the operation of large-scale manufacturing companies. Material management comes before processing of completed products held for distribution to customers (Coyle, Bardi, & Langely 2016). Material management is essential in supply chain network as it perform important functions that help the development of materials, management items, dismissing vehicle loads and gathering materials for shipments purposes (Langevin & Riopel, 2015). Materials management involves all activities in the flow of materials from the supplier to the consumer. Such activities include physical supply, operations planning and control, and physical distribution Banjoko (2000). Other terms sometimes used in this area are business logistics and supply chain management. Often, the emphasis in business logistics is on transportation and distribution systems with little concern for what occurs in the factory. Materials Management is a tool to optimize performance in meeting customer service requirements at the same time adding to profitability by minimizing costs and making the best use of available resources. The basic objective of Materials Management as explained by Jacobs, Chase, and Aquilano (2009) is to ensure that the right item is bought and made available to the manufacturing operations at the right time, at the right place and at the lowest possible cost. They stressed that without adequate planning for materials resources, the overall performance of an organization may be crippled.

Today, there are dramatic evolutions in the market environment and every organisation strives to keep itself in business. Major competition has shifted from the market to the production floor where manufacturing costs can be cut down and profitability boosted for companies to compete favourably. Backed by advanced technology, companies are closely monitoring their manufacturing costs and embarking on efficient management of materials (Ondiek, 2009). Fearon, Ruch and Wieters (2009) see the introduction of computers as a great boost to the adoption of Materials Management, as materials functions have many common databases. Therefore, efficient Materials Management is fundamental to the survival of business, companies and economy. Materials management is now said to be the last limit for cost control and profit improvement, influencing to higher production and productivity and thus widely created for cost-effectiveness in any individual business management echelon must appreciate that it is not the materials manager's main prerogative, but in fact this laurels. Whatever and whenever realized, depends primarily on top management support and without its approval all his efforts are exercise in futility (Monday, 2008). In management or enterprise management we understood that for companies to ascertain their goals and objectives there must be well-organized and effective use of planning, organizing, controlling and coordinating therefore for the results of the materials to come out positively the companies should strategize how to carry out their production, purchase and supply schedules of materials received and handled transportation, warehousing etc. with efficient planning of those mentioned above the organization with safeguard of timely and available of materials be able to meet the agreed projected demand and also meet their specific goals (Asaolu, Agorzie, & Unam, 2012). Efficient management of materials brings about substantial savings in project costs. If materials are procured too early, capital may be seized up and interest charges sustained for the excess inventory of materials. Materials may lose value during storage or got stolen, unless special care is taken. Delays and extra expenditure may be sustained if materials needed for particular activities are not available. Atieno and Wanyoike, (2015) show that effective materials management process is very essential to success of a construction project.

Nigeria manufacturing companies have understood the advantages of embracing great materials administration and are taking keen interest regarding materials administration since survival of any firm relies upon how well their expenses are overseen (Ondieki, 2014). Nevertheless, most Nigeria companies are not applying refined methods of material administration in comparison to resources spent on acquisition and maintenance of materials in various companies. The issues experienced in material administration include absence of adaptability, entrusting a great deal of delicate material exercises to one office and absence of all around coordinated database to help data stream on materials. Materials Management envelops all activities of administration over materials from obtaining of raw materials through the production process to the last step of conveyance of the finished goods to the customers. It unites under one administration duty regarding deciding the assembling prerequisite, booking the assembling forms and obtaining, putting away and administering materials (Ondiek, 2014). Nigeria has a huge scale-manufacturing segment serving both the local market and export to the West African community and beyond. Assembling and manufacturing added to around 25% of the Gross Domestic Product (GDP) in 2013 (NNBS, 2014).

The various types of materials to be managed in any organization include purchased materials, work-in-process (WIP) materials and finished goods (Banjoko, 2000). Ogbadu (2009) identified basic price, purchasing costs, inventory carrying cost, transportation cost, materials handling cost, office cost, packing cost, marketing cost, obsolescence and wastages as the various costs involved in these materials. Thus, the management of these materials so as to reduce the costs associated is what the study refers to as Materials Management Previous Researches (Ramakrishna, 2005; Ogbadu, 2009; Ondiek, 2014) have shown that materials account for more than fifty percent of the annual turnover in the manufacturing companies. This shows clearly that priority should be given to management of materials in manufacturing companies to avoid unnecessary costs. Thus, Materials Management should no longer be viewed as a drain-pipe, but as a serious stabilizing and economic growth potential factor. Unfortunately, few studies exist yet on the effect of Materials Management on the productivity of manufacturing companies for a developing economy as Nigeria. This study intends to fill this gap.

Statement of the Problem

The present state of the plastic manufacturing companies in Anambra State, Nigeria reflects various problems ranging from delays in project execution/delivery, substandard work, disputes, to cost and time overrun as a result of material shortage and wastages on production, theft and displacement of materials on sites, as well as poor accounting and security system of the concerned companies. Lack of materials, not only causes delays, but a consequent decrease in productivity and resulting in cost overruns. Non-compliance strictly with material requirement planning of quantities, schedule of materials, and lack proper material stock control practice is another problem which decreases profitability of many plastic manufacturing companies. Materials are being wasted due to improper management of material control, material planning strategy, material handling, material procurement strategy and inventory control in many manufacturing companies. Material management practices are critical to an organization's success in today's competitive and dynamic market. In most organizations, direct materials represent up to 50% of the total product cost, as a result of the money entrusted on materials, thereby affecting the profitability of the organization. According to vision 2030, manufacturing companies should account for 20% of GDP by 2030. However, this has not been achieved with the companies contribution stagnating at an average of 10% for more than ten years with a growth of 3.1% percent which is lower than the overall countries economic growth of 5%. Most plastic manufacturing companies face problems of material control, material planning strategy, material handling, material procurement strategy, inventory control, stock outs, over supply of stocking, stock obsolescence, poor forecasting, stock pilferage, poor responsiveness to customer needs and lack of proper material management equipment, methods and practices results into poor productivity. Due to poor material control management, poor storage and retrieval of material, that increases operational cost and reduces profitability in many manufacturing companies.

Empirical evidence on the effect of material management on organizational productivity was mixed. Some scholars like Igbojiaku, (2017), Zairra and Narimah (2017) identifies negative relationship between material management and organizational productivity while Adamu (2020), Kisioya and Moronge (2019) find positive relationship between material management and organizational productivity. Therefore, this study was undertaken to fill the knowledge gap by assessing the effect of material management on organizational productivity in plastic manufacturing companies in Anambra State, Nigeria.

general objective was to examine the relationship between material management and organizational productivity of plastic manufacturing companies in Anambra State, Nigeria. The specific objectives are to:

1. Examine the relationship between material planning strategy and organizational productivity in plastic manufacturing companies in Anambra State, Nigeria.
2. Investigate the relationship between material handling and organizational productivity in plastic manufacturing companies in Anambra State, Nigeria.
3. Ascertain the relationship between material procurement strategy and organizational productivity in plastic manufacturing companies in Anambra State, Nigeria.

Research Questions

The following research questions were formulated to give the study direction:

i. To what extent does material planning strategy relate with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria?
ii. To what degree does material handling relate with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria?
iii. To what extent does material procurement strategy relate with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria?

Hypotheses

Based on the four objectives and four research questions, four hypotheses were formulated to aid the study:

H_{01}: Material planning strategy has no positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria.

H_{02}: Material handling has no positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria?

H_{03}: Material procurement strategy has no positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria?

REVIEW OF RELATED LITERATURE

Conceptual Framework

Material management

When talking about materials it may include raw materials, components; sub-assemblies etc. now let us see the different definitions of materials management. The materials management is a process that starts with the supplier (Bially 2015). The materials management process begins from the point of entry into the companies as raw materials and components. The receipt and section functions begin on receipts of delivery notice from the supplier (Heinritz, 2011). The purchase order copies are received and checked so that quality and other specifications meet the firm's requirements. After then, the inspection job is carried out. The inspection can be carried out by the storekeeper, by technical staff, and by the department requisition, (Morrison 2014). A form is filled certifying that the inspection is completed and that the goods met the specifications. After then the forms are distributed in the following order, "first copy to the procurement department to close their order, second to the accounting department for payment and review, third copy to the requisition department or users notifying them of the availability of the materials and the final copy is retained in the department" (Lee 2012). Next is the issuance and dispatch of materials to the appropriate places of need.

Material management is defined as the process to provide accurate material at the exact place at right time in right quantity so as to minimize the cost of project. Material management is associated with the planning, identification, procuring, storage, receiving and distribution of material. The responsibility of Material management department for the flow of material from the time the material is ordered, received, and stored until they are used is the basic responsibility of material management. Materials Management is a means to optimize performance in meeting up with customer service requirements at the same time increasing profitability by minimizing costs and making the best utilization of available resources.

The basic goal of materials management as explained by Jacobs, Chase, & Aquilano (2009) is to make sure that the right item is purchased and made available to the manufacturing operations at the right time, at the right place and at the minimum cost. According to Wild, (2012) materials management is a view which brings about the responsibility for deciding the manufacturing requirement that is setting up the manufacturing processes and purchasing, storing and dispensing materials (Ondiek, 2009). Dobler and Burt (2016) states that materials management provides an integral system approach to the proper arrangement of materials activities and the total material price. They see it as something that stand as assigning to a single operating department all main activities, which contribute to the price of materials. The goal is to enhance performance of materials systems, as opposed to sub-optimizing the performance of sub-individual operating units that are fragment of the material system.

Materials management as a definition is the process which integrates the flow of supplies into, through and out of an organization to achieve a level of service which ensures that the right materials are available at the right place at the time in the right quantity and quality and at the right cost (Mohammed 2015). It includes the functions of procurement, materials handling and storage, production and inventory control, packaging, transport and associated information systems and their application throughout the supply, manufacturing, and service distribution companies. Material management is responsible for purchasing the highest quality equipment and products at the lowest possible cost for the organization. Material management refers to the flow of materials from the environment to the organization and within the organization until it is ready to be dispatched back to the environment (Abuja, 2012). It is concerned with what types of materials to get, how much to get, when and where to get, at what price. Materials management, therefore, is a process of planning, organizing, directing and controlling the flow of materials including the acquisition and utilization of materials in a organization. Materials management involves the task of coordination of the performance of the various materials function, the provision of communication networks, moving, storing and controlling materials in optimum manner so as to provide quality service at a minimum cost (Abuja, 2012). According to (Nair, 2017), materials management is the integrated functioning of purchasing and allied activities to achieve the maximum co-ordination and optimum expenditure in the area. From these definitions we can define materials management as the planning, organization, sourcing, and purchasing, moving storing and controlling of materials, form their initial purchase through internal operation to distribution of finished goods or services in optimum manner i.e. minimum cost. Although materials management organization can vary between companies, it can include a number of separated groups, such as material planning and control, material and purchasing research, receiving stores, scrap and surplus disposal.

Organizational Productivity

Productivity is a ratio to measure how well an organization converts input resources (labor, materials, machines, money) into goods and services (Tokarčíková, 2013). Dorgan (2014) defines productivity as "the increased functional and organizational performance, including quality. Rolloos (2007) claims that productivity is that what people can produce with the least effort. Nda & Fard (2013) describe employee productivity as the measure of output per unit of input economically. Rohan and Madhumita (2012) adopt a different view and see employee productivity as the log of net sales over total employees. Pritchard (2015) illustrates three definitions which relate to productivity is output/input, in other words, is a measure of efficiency; is a composition of effectiveness and efficiency; and whatever makes the organization function better. The importance of higher productivity of the employees in manufacturing companies cannot be overemphasized, which include the following; Higher incomes and profit; Higher earnings; Increased supplies of both consumer and capital goods at lower costs and lower prices; Ultimate shorter hours of work and improvements in working and living conditions; Strengthening the general economic foundation of workers (Parker, Waller & Hu, 2013).

The existence of any organization is anchored on productivity and its importance cannot be overemphasized. It is the wish of every organization to be productive because productivity forms the cardinal essence for which every organization exist. To attain or increase productivity has led many organizations into constant reshuffling practice. This is in line with Simon (2007) when he rightly noted that "the issue of productivity has been instrumental to most repositioning exercises that go on from time to time in many organizations". In fact productivity has often become the most central, contentious and analytical issues in all organizations. Productivity refers to the real output per unit of labor. It is a powerful driver of international capital flows. Productivity levels seem to be the highest in United States as compared to the euro area, because of higher employment rates in U.S. (Skoczylas & Tissot, 2005). Meneze (2006) defined productivity as the employee's ability to produce work or goods and services according to the expected standards set by the employers, or beyond the expected standards. Productivity is calculated by comparing total amount of output to the total amount of input used to produce this output (Bojke, 2012).

Productivity is defined by Amah (2006) as the measure of how efficiently and effectively resources (inputs) are brought together and utilized for the production of goods and services (out puts) of the quality needed by society in the long term. This implies that productivity is a combination of performance and economic use of resources. High productivity indicates that resources are efficiently and effectively utilized and waste is minimized in the organization. Productivity balances the efforts between different economic, social, technical and environmental objectives (Amah, 2006). High productivity provides more profit for investors and promotes the development of the enterprise. Productivity measurement indicates areas for possible improvements and shows how well improvement efforts are faring. It helps in the analysis of efficiency and effectiveness.

Amah, (2006) notes that productivity is measured in terms of outputs per labour hour. However this measurement does not ensure that the firm will make money (for example when extra output is not sold but accumulates as inventory). To test whether productivity has increased, the following questions should be asked: “Has the action taken increased output or has it decreased inventory?” “Has the action taken decreased operational expense?” This would then lead to a new definition which is: Productivity is all the actions that bring a companies closer to its goals.

Theoretical Framework

Inventory Management Theory by Nowicka-Skowron (2007)

This study is anchored on inventory management, which was propounded by Nowicka-Skowron (2007) emphasizes the role that management of materials of plays in production in manufacturing companies. The theory posits that the chain of movement of material and information depends, to a large extent, on the availability of materials and the quality of information at the disposal of the chain operator. Material theory (or more formally the mathematical theory of inventory and production) is the sub-specialty within operations research and operations management that is concerned with the design of production/inventory systems to minimize costs: it studies the decisions faced by companies and the military in connection with manufacturing, warehousing, supply chains, spare part allocation and so on and provides the mathematical foundation for logistics. The inventory control problem is the problem faced by a firm that must decide how much to order in each time period to meet demand for its products. The problem can be modeled using mathematical techniques of optimal control dynamic programming and network optimization.

The purpose of inventory theory is to determine rules that material management can use to minimize the costs associated with maintaining material management and meeting customer demand. Inventory material management is studied in order to help companies save large amounts of money. Inventory material management models answer the questions: When should an order be placed for a product? .How large should each order be? The answers to these questions are collectively called material management. Companies save money by formulating mathematical models describing the inventory system and then proceeding to derive an optimal material management policy.

Material Requirement Planning and Organizational Productivity

Material requirement planning is not only a technique for planning “material” requirements. It is also a logic that relates all the activities in a companies to customer demands. People can manage all the resources in a companies by using MRP logic together with data processing in other areas. This entire system is called a Manufacturing Resources Planning System, or MRP II. With the introduction of technological enhancements such as open systems platforms and client/server architecture, MRP II systems are now evolving into Enterprise Resource Planning Systems (ERP). An ERP system plans not only the allocation of manufacturing resources but also other resources, and has applications in service as well as manufacturing industries. In this book, we concentrate our discussion on manufacturing. Material requirements planning (MRP) is a system for calculating the materials and components needed to manufacture a product. It consists of three primary steps: taking inventory of the materials and components on hand, identifying which additional ones are needed and then scheduling their production or purchase (Oladokun, & Olaitan, 2012).Material requirements planning is a computer-based inventory management system designed to improve productivity for businesses. Companies use material requirements-planning systems to estimate quantities of raw materials and schedule their deliveries. Material requirements planning is a computer-based inventory management system designed to improve productivity for businesses. Companies use material requirements-planning systems to estimate quantities of raw materials and schedule their deliveries (Waldner, & Jean-Baptiste 2012). Material requirements planning are designed to answer three questions: What is needed? How much is needed? When is it needed? MRP works backward from a production plan for finished goods, which is converted into a list of requirements for the subassemblies, component parts, and raw materials that are needed to produce the final product within the established schedule.

Material Requirements Planning system is a planning and decision-making tool used in the production process which analyses current inventory levels and production capacity and the need to manufacture goods, based on forecast (Moustakis, 2000). Material requirements planning schedules production as per bills of materials while minimizing inventory. The technique is computerized and looks at requirements within a fixed period. Material requirement planning is a planning and control system for inventory, production, and scheduling. Material requirements' planning converts the master schedule of production into a detailed schedule, so that you can purchase raw materials and components. Used mostly in the manufacturing and fabrication industries, this system is a push type of inventory control, meaning that organizations use forecasting to determine the customer demand for products. The manufacturing or fabrication companies will forecast the amount and type of products they will purchase, along with the quantity of materials to produce them.

Material Handling and Organizational Productivity

Material handling is a fancy term for handling goods and materials within in your warehouse, facility, or storage area. Material handling can be broken down into to the movement, protection, storage, and control of materials and products within your facility (Prachi, 2015). Material handling is made easier using material handling equipment such as forklifts and order pickers and includes activities such as loading/unloading trucks, palletizing goods, retrieving goods from storage to be shipped out, and more. Material Handling is an essential component of any successful warehouse (Hopp, 2011). The reason being, a proper materials handling protocol will prevent accidents and improve the efficiency of your facility. This means material handling can improve customer service by making products easy to find, move, and ship out; cut costs by reducing the amount of time spent moving products;, and reduce product damages by properly transporting your products (Kulwiec, 2011). The common hand shovel and the baskets were the only material handling tools, until some years ago, but now due to increasing demand for sophisticated handling equipment, material handling system has been revolutionized all over the world. Material handling equipment is anything you use to help move, protect, store, or control the materials in your facility.

Material handling ranges from movement of raw material, work in progress, finished goods, rejected, scraps, packing material, etc. These materials are of different shape and sizes as well as weight. Material handling is a systematic and scientific method of moving, packing and storing of material in appropriate and suitable location (Sule, 2014). Raw materials form a critical part of manufacturing as well as service organization. In any organization, a considerable amount of material handling is done in one form or the other. This movement is either done manually or through an automated process. Throughout material, handling processes significant safety and health; challenges are presented to workers as well as management. Therefore, manual material handing is of prime concern for health and safety professional, and they must determine practical ways of reducing health risk to the workers. The main objective of the efficient materials handling is to decrease the costs (Prachi, 2015). Materials handling equipment does not come under the production machinery but is an auxiliary equipment which can improve the flow of materials which in turn shall reduce the stoppages in production machines and thus increases their production Material handling may be considered a specialized activity for modern manufacturing units. From the time, the input material or raw materials enter the industrial unit and go out of the unit in the form of finished products, these are handled at all stages in between, no matter, on the shop floor or in the stores. It has been estimated that the average material handling cost is roughly 30 to 60% of the cost of production (Kulwiec, 2011). This is so since majority of production time is consumed in handling materials before, during and after the manufacture. However, this cost can be reduced by proper selection, operation, maintenance and layout of material handling devices but cannot be totally eliminated. The configuration of production equipment and departments and the design and arrangement of a proper material handling system is referred to as the facility planning. The design and arrangement of material handling system could be more important problem in spite of the fact that the first attempt is an important issue in facilities planning (Chopra & Meindl, 2011). Materials handling makes production flow possible, as it gives dynamism to static elements such as materials, products, equipments, layout and human resources (Stock & Lambert, 2011).

Material Procurement Strategy and Organizational Productivity

Material procurement strategies have already been proven in a number of studies (Aberdeen Group, 2011). According to these studies, material procurement strategy enables companies to decentralize operational procurement processes and centralize strategic material procurement processes as a result of the higher supply chain transparency provided by procurement systems. A companies' material procurement function is subdivided into strategic and operational processes since activities and priorities in these two areas are entirely different (Kaufmann, 2009). Supplier management, the pooling of purchase requisitions and material procurement-oriented product development are tasks that are typically assigned to strategic material procurement. Strategic material procurement often had to deal with administrative routine work as well, such as individual transactions, converting purchase requests into purchase orders or ensuring the correct allocation of invoices received. Strategic aspects are frequently neglected in the process, with the buyer having little influence over the choice of suppliers and the purchased products.

Johnston (2005) argues that costs have to be managed well to achieve the firm's performance goals. There are several key success factors, related to both the competency of the service provided by an online auction intermediary and to the organizations own internal capabilities. One key success factor relating to cost management is technical capability of the system (Johnston, 2005). Johnston (2005) specified technical service quality in terms of system cost (security, reliability, easy to use, accessibility) and service quality (e.g. responsiveness of service). In addition, trust in the service provider is another major success factor for strategic material procurement adoption (Rotchanakitumnuai & Speece, 2009). Organizational record management systems also have a major influence on the organizational productivity (Croom & Brandon-Jones, 2007). Organizational record management is an important driver for increasing internal process improvement, enhancing learning and innovation including the knowledge of purchasing personnel, their computer skill and resources. Record Management support is key influence organizational performance (Rotchanakitumnuai & Speece, 2004). Positive management support for material procurement can ensure system adoption success. Training is the best support to enable personnel to use the records more efficiently. Croom & Brandon-Jones (2007) found that record management is one key success factor of strategic procurement implementation. Material management makes the material procurement process more transparent and helps organizations achieve good governance impacts (Hui, 2011).

Empirical Review

Previous studies have convergent opinions on the relationship between the material management and organizational productivity. For example, Adamu (2020) examined the effect of material management on the performance of Benue Brewery companies, Nigeria using survey research design with a population of 242 respondents and a sample of 151. Data was collected using questionnaire and analyzed using descriptive statistics such as frequency, simple percentage and the relationship between the variables of the model was tested using multiple regression analysis. The result of the regression analysis shows that inventory control system and stock valuation have a positive and significant ($p<0.05$) effect on organizational performance. Lead time was negatively signed but the effect is statistically significant ($p<0.05$). The researcher concludes that when properly carried out planned material management can bring about efficiency at workplace. The researcher recommends that, management of the Nigerian Brewery should bring an improvement in the lead time as it is will bring about acquiring and delivering the needed materials within the shortest time possible.

Kisioya and Moronge (2019) examine the influence of Material handling practices on performance of manufacturing companies in Nairobi Kenya. The specific objectives was to determine the influence of material stock control on Performance of large-scale manufacturing companies in Nairobi, to examine the influence of material handling automation on Performance of large-scale manufacturing companies in Nairobi, to determine the influence of Material packaging on Performance of large-scale manufacturing companies in Nairobi and to examine the influence of material logistics planning on Performance of large-scale manufacturing companies in Nairobi. The study adopted descriptive survey design and the target population was 355 large -scale-manufacturing companies in Nairobi county Kenya. Stratified random sampling was adopted to select a sample size of 188 large-scale manufacturing companies in Nairobi County, Kenya. Primary data was collected using structured questionnaires inform of Likert scale. The general managers of each manufacturing firm selected were involved in data collection. Filled questionnaires were reviewed for completeness and then coded and entered in SPSS. Data analysis was involved both descriptive and inferential statistics. The analysed data was presented inform of tables together with associated explanations. A good response rate of 71.3% was realized. It was established that most of the material handling practices indicators have positive impact on performance of the firm. The study further adopted a regression analysis to determine the relationship between the variables at 5% confidence level of significance. The study findings showed that the four variables had a significant influence on performance of the companies.

Joel, and Noor (2019) determined the influence of material management on performance of Large Manufacturing companies in Nairobi City County, Kenya. The study adopted the descriptive research design; research design is defined as a plan, structure and strategy of investigation conceived to obtain answers to research questions and control variance. The unit of observation analyses of this study consisted of officers who are assigned with ware house responsibilities comprising of warehouse middle-level managers. The study used stratified random sampling procedure to select respondents. Stratified random sampling procedure is a probability sampling procedure in which the target population is separated into mutually exclusive homogenous segments (strata). The collected research data was checked for any errors and omissions, coded, defined and then entered into Statistical Package for Social Science (SPSS Version 23). Descriptive statistics was used to portray the sets of categories formed from the data. The mean, standard deviation and variance on the dependent and independent constructs was used to show how clustered or dispersed the constructs are. The study used multiple linear regression analysis to test the statistical significance of the various independent variables In testing the significance of the model, the coefficient of determination (R2) was used to measure the extent to which the variation in implementation on supply chain performance is explained by the variations of various factors on the outsourced distribution services. The study established that Basic functionality of materials management includes various factors such as supply, material pricing, and usage. Large manufacturing companies should take more in-depth look at the functions of materials management and how it is advantageous to large manufacturing companies supply chain to enable production facility and locate areas where aid is needed. The study recommends that Materials management has successfully optimized production in various manufacturing companies' facilities, but the process cannot effectively stand alone. Implementing an advanced planning and scheduling system (APS) should be implemented in cost reduction, inventory reduction, and material flow enhancement.

Daniel, (2019) examined the effects of materials management on the productivity of an organization. Many business organizations in Nigeria fail to value the role of materials management in improving their productivity. In most situations, the function seems to be a reserve in the system, while in other situation the roles are actually applied firmly. Some organizations are of the certainty that material management is just a regular function of the procuring department thereby moderating it to the background. Rising from this backdrop, this study specific aims are finding out how an organization can tackle the problems identified and how effective material management can increase the profitability of an organization. Secondary data were obtained through books, journals, and internet. Empirical works of other scholars were consulted. A simple size of 255 was obtained from the population of 705 at 5% error tolerance and 95% degree of freedom using Yamane's statistical formula 255(100%) of the questionnaires distributed 250 (98%) were returned and 5(2%) were not returned. The questionnaire was designed in Likert scale format. The researchers conducted a pre-test on the questionnaire to ensure the validity of the instrument.

Pearson moment product co-efficient and regression analysis were used to test the hypotheses. The study discovered that material management used by the organization adds to the profitability of the companies, sufficient storage facilities stops interruption on production process among other things. As an outcome of the above, it was suggested that there should be respectable record system of materials for the processes of the organization as it influences production and the training of staff to obtain new skills and knowledge required for the work for the profit of the organization

Dagim, (2018) examined the role of material management on organizational performance: A Case Study in Commercial Bank of Ethiopia. The research employed descriptive research designed to describe the role of material management on the bank`s performance. The target populations of the study were 80 employees of the bank who are directly involved in the material management aspects. The researcher used census sampling, by involving all of the employees of the bank who are working in material management as the population of the study. The quantitative data were analyzed through descriptive statistics such as mean, standard deviation, median and percentages. Narrative approach besides this was applied in analyzing the qualitative data in order to demonstrate the findings of the study in a cleaner manner using table and analyzed with the help of percentage. The thesis result reveals the study established that there is practice of planning and using it, but federal proclamation is not well obeyed. This concluded that the bank's endeavor to material procurement is not backed by proper practice based on law. In addition, inventory control system is employed only averagely that it lacks consistency and profundity. However, annual inventory practice is carried out in the bank implying linger of a year to get information on materials procured and used.

Oyebamiji (2018) examined the effect of materials management on the performance of manufacturing companies with particular reference to the selected cement companies. Purposive sampling technique was employed to select Dangote Cement Plc, Ashaka Cem Plc and Lafarge Africa Plc, while judgmental technique was used to select ten (10) staff members from purchasing/store/ logistic department of the selected cement companies respectively, total of thirty (30) respondents as a sample size for the study. The data collection instrument for the study was a structured questionnaire and a personal interview. Data analysis was conducted with the aid of multiple regression analysis. Result revealed that materials management dimensions jointly contribute significantly to firm performance. The study further revealed that materials inventory, materials procurement and inter-departmental collaboration have an insignificant effect on firm performance, while only materials storage has a significant impact on firm performance. The study concluded that effective materials management is a veritable tool to organization performance. Subsequently, the study recommended that management should embrace effective materials management especially in the area of materials inventory, materials procurement and inter-departmental collaboration, in order for the companies to achieve its vision of being a global leader in cement production and the largest employers of labour in the world.

Assiamah, Daniel and Hanson (2018) studied materials management and its effect on cost of supplies case study of cocoa processing companies of Ghana In most organizations within the country (Ghana), materials management has been relegated to the background without any proper control. This means that companies are investing heavily in materials than is necessary. How can materials management minimize the cost of supplies in cocoa processing companies of Ghana. The aim of this research is to illustrate how the application of materials management concept can minimize the cost of supplies in Cocoa Processing companies of Ghana. Primary data, interviews (face-to-face, telephone) and questionnaire were used. Secondary data has been sourced through literature from the university library and internet sources, qualitative design method was chosen over others because of the nature of the research work.Financially, materials (inventories) are very important to manufacturing companies and on the balance sheet they usually represent from twenty to sixty percent of total assets. Therefore, if the application of the concept of materials management is accepted with well qualified personnel, it could lead to the minimization of cost. The function of a materials manager is to promote coordination and integration within the supply chain and the major benefits are assumed to be; reduction in interdepartmental conflicts, reduction of inventory levels, increased knowledge of total corporate operations and reduction of materials handling costs among others

Albert, Shakantu and Ibrahim, (2021) investigated the effect of poor materials management on materials waste, quality of work, and project profitability in construction projects in Nigeria. A qualitative research approach was adopted in the study which included collective case study investigations. The population for the study was ongoing building project sites (ten case studies purposefully selected) in Abuja. The research instrument was direct-covert observation by the researchers to observe and record the construction processes, people's behaviour, actions and interactions relating to materials management. The construction processes observed included materials usage onsite, loading/ offloading of materials from procurement, storage, as well as materials handling and movement on site. Recording sheets with checklists were pre-set with statements (Likert items) and responses to observe and document the effect of poor materials management. The statements were rated on an ordinal three-point Likert scale. The observed/collected data were analysed using descriptive methods to determine the moral values. The findings from the study revealed that poor materials management has a considerable effect on material waste generation on any construction project site; moderate effects on quality of building projects, and both considerable and moderate effects on profitability in the construction projects**.** Based on these findings, it can be concluded that effective management of materials in construction projects would reduce the amount of waste generation, increase the quality of construction work, and offer optimum profitability to construction contractors. It is, therefore, recommended that the construction companies in Nigeria should collaborate with government agencies to develop guidelines for preparing a waste management plan for the construction companies.

Gamariel and Tuyisenge (2021) evaluated the effect of material handling and material sourcing on profitability of Urwibutso Enterprise Ltd. The study was guided by the following research objectives: to determine the effect of stock control on profitability in Urwibutso Enterprise Ltd., to measure the impact of material logistic planning on profitability in Urwibutso Enterprise Ltd., to examine the role of material packaging on profitability in Urwibutso Enterprise Ltd., to assess the effectiveness of quality control of raw material on profitability in Urwibutso Enterprise Ltd. The study utilized descriptive research design. The population of this research was 67 employees of Urwibutso Enterprise Ltd. and was given a questionnaire as a data collection instrument. Data obtained from the questionnaire were processed into SPSS. Purposive sampling technique was used and the questionnaires were used as instruments of data collection. The research findings imply that the material handling and material sourcing has positive effects on the profitability in Urwibutso Enterprise Ltd. The respondents strongly agree that the analysis about stock control (material stock accuracy, material consumption controls, and stock taking frequency) presented with an overall mean of 3.58. Analysis did for material logistic planning (preparation of logistic plans, smart material logistic goals, and usage of logistic plans), the respondents agree that is shown by the overall mean of 3.52. For the analysis of material packaging (appearance, protection, and disposability), respondents agree that is shown by the overall mean of 3.44. For the analysis of quality control of raw material (ingredients and finished product), respondents agree that is shown by the overall mean of 3.47. The researcher concluded that material handling and material sourcing (stock control, material logistic planning, material packaging, and quality control of raw material increase) play significant effect to the profitability of Urwibutso Enterprise Ltd. and the researcher recommended that Urwibutso Enterprise Ltd. should adopt the material packaging which is environmentally friendly and well standardized. These should be done by having a definite automated material packaging system that improves production scheduling, makes flexible manufacturing processes and fast and effective recognition of goods in the stores. This will aid in improving industries' overall performance as much packaged materials can be traced easily and the location is identified.

Donyavi and Flanagan, (2020) examined the contribution of material management practices on performance of construction of project. Specifically, the present research assessed the effects of material estimation costs on project performance, the effect of procurement on performance of construction project and examined the effect of inventory control on performance of construction projects. Both descriptive and correlational research designs were adopted where qualitative and quantitative approaches were applied. Data collection instruments that used were questionnaire, interview guide and documentary analysis. The target population was 200 contractors and 180 subcontractors. The sample size was 195 respondents. Furthermore, information was analysed using Statistical Package for Social Sciences version 21.0. Results evidenced a positive and significant correlation between material estimation cost and performance of construction project at Baraka Properties was 0.518. A positive and significant correlation of 0.884 was also obtained between procurement process and project performance. The results also indicated that the coefficient correlation between procurement process inventory control and project performance was 0.874. It was recommended that contractors should be careful with the problem areas that positively impact cost management, recruitment of qualified workers in managing and analysing costs. It was suggested the necessity to utilize inventory control systems, construction companies have to enhance their budget allocate to capacity building and career development in order to ameliorate required knowledge and skills for workers. It is pertinent to implement information technology that is helpful in disseminating information and quickening orders from supplies. Future studies are pertinent to assess the efficiency of these strategies to management project cost.

Adamu (2020) examined the effect of material management on the performance of Benue Brewery companies, Nigeria using survey research design with a population of 242 respondents and a sample of 151. Data was collected using questionnaire and analyzed using descriptive statistics such as frequency, simple percentage and the relationship between the variables of the model was tested using multiple regression analysis. The result of the regression analysis shows that inventory control system and stock valuation have a positive and significant ($p<0.05$) effect on organizational performance. Lead time was negatively signed but the effect is statistically significant ($p<0.05$). The researcher concludes that when properly carried out planned material management can bring about efficiency at workplace. The researcher recommends that, management of the Nigerian Brewery should bring an improvement in the lead time as it is will bring about acquiring and delivering the needed materials within the shortest time possible.

METHODOLOGY

The researcher adopted survey research design. This approach is a research method that studies people or objects, their attitudes, belief system, opinions and other behavioral manifestations. Survey research is designed to scientifically describe phenomena and their relationships in the actual environment after a given time, survey must depend instead on samples of respondents drawn from the population and considered a representative of the population. The study was carried out in Anambra state, Nigeria. The population of the study comprised 1648 made up of all staff plastic manufacturing companies in Awka, Nnewi and Onitsha in Anambra State. The sample size consisted 321using statistical formular devised by Borg and Gall (1973). This study used primary and secondary source of data. Primary source of data is the data collected by researcher for the specific research purpose from Ministry of Commerce and companies Awka 2021. The instrument employed for data collection was questionnaire constructed by the researcher. The researcher used face and content validity in this research work. The researcher used test-retest method and Cronbach's alpha in order to test reliability of the research instruments. The Cronbach's Alpha results show that material requirement planning (MRP), material handling (MH) material procurement strategy(MPS), and organizational productivity recorded reliability coefficients of 0.722, 0.790, 0.724, 0.792 and 0.710 respectively. Based on the threshold, they are found to be reliable for the study. Pearson Product Moment Correlation Coefficient conducted to assess the relative predictive power of the independent variables on the dependent variable. The statistical package for social sciences (SPSS) version 21 was employed to test the hypotheses.

DATA PRESENTATION AND ANALYSIS

In this section, the data generated from the employee of the sampled plastic manufacturing companies were presented, analyzed and interpreted. Three hundred and twenty-one (321) copies of questionnaires were distributed to the respondents, out of which three hundred copies was properly filled and found relevant to the study, 21 copies were not properly filled. Therefore, the analysis in this section will be based on the three hundred relevant copies. The first section covers the demographic features of the respondents. The second section analyzes the data relevant to research questions.

Research Questions one: *To what extent does material planning strategy relate with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria?*

Respondents opinion on whether material planning strategy relate with organizational productivity in plastic manufacturing companies

		Frequency	Percent	Valid Percent
Valid	Agree	73	24	24
	Strongly Agree	91	30	30
	Disagree	68	23	23
	Neutral	51	17	17
	Strongly Disagree	17	6	6
	Total	300	100	100

Source: Field Survey, 2022/SPSS

The table shows that greater percentage 30% of the respondents strongly agree that material planning strategy relate with organizational productivity in plastic manufacturing companies, 24% agree, 17% are neutral, 23% disagree, while 6% of respondents strongly disagree.

Research Question Three: *To what degree does material handling relates with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria?*

Respondents view on whether material handling relates with organizational productivity in plastic manufacturing companies

		Frequency	Percent	Valid Percent
Valid	Agree	167	56	56
	Strongly Agree	91	30	30
	Disagree	20	7	7
	Strongly Disagree	17	6	6
	Undecided	5	.1	.1
	Total	300	100	100

Source: Field Survey, 2022/SPSS

The table reveals that 30.% of the respondents strongly agree that material handling relates with organizational productivity in plastic manufacturing companies 56 %agree, 7% are neutral, and 6% disagree, while 1% of respondents strongly disagree.

Research Question Three: *To what extent does material procurement strategy relates with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria?*

Respondents view on whether material procurement strategy relates with organizational productivity in plastic manufacturing companies

		Frequency	Percent	Valid Percent
Valid	Agree	172	60	60
	Strongly Agree	102	31	31
	Disagree	11	4	4
	Neutral	13	5	5
	Strongly Disagree	4	1	1
	Total	300	100	100

Source: Field Survey, 2022/SPSS

The table reveals that 31.0%of the respondents strongly agree that material procurement strategy relates with organizational productivity in plastic manufacturing companies 60% agree, 4.5% are neutral, 4% disagree, while 1% of respondents strongly disagree.

Testing of Hypotheses

Hypotheses One

H_0:Material control has no positive significant relationship with organizational productivity in

H_0: Material planning strategy has no positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria

H_{01}: Material planning strategy has a positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria

Result of Pearson product-moment correlation analysis between material planning strategy and organizational productivity

Correlations

		Material Planning Strategy	Organizational Productivity
Material Planning Strategy	Pearson Correlation	1	.790**
	Sig. (2-tailed)		.000
	N	300	300
Organizational Productivity	Pearson Correlation	.790**	1
	Sig. (2-tailed)	.000	
	N	300	300

****. Correlation is significant at the 0.05 level (2-tailed).**

Source: Field Survey, 2022

Interpretations

The correlation shows that there is a significant relationship between material planning strategy and organizational productivity. The Pearson's product moment correlation coefficient values reveal a strong positive and significant correlation between ease of use and organizational productivity in plastic manufacturing companies (r = .790, at p<0.05). This implies that an increase in material planning strategy will increase organizational productivity in plastic manufacturing companies in Anambra State. Based on the findings, the study therefore rejects the null hypothesis two (H_{02}) which states that Material planning strategy has no significant relationship with organizational productivity in plastic manufacturing companies in Anambra State.

H_{03}: Material handling has no positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria?

Hypotheses Two

H_0: Material handling has no positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria

H_{01}: Material handling has a positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria

Result of Pearson product-moment correlation analysis between material handling and organizational productivity

Correlations

		Material Handling	Organizational Productivity
Material Handling	Pearson Correlation	1	.813**
	Sig. (2-tailed)		.000
	N	300	300
Organizational Productivity	Pearson Correlation	.813 **	1
	Sig. (2-tailed)	.000	
	N	300	300

****. Correlation is significant at the 0.05 level (2-tailed).**

Source: Field Survey, 2022

The correlation shows that there is a significant relationship between material handling and organizational productivity. The Pearson's product moment correlation coefficient values reveal a strong positive and significant correlation between material handling and organizational productivity ($r = 0.813$, at $p<0.05$). This implies that an increase in material handling will increase organizational productivity in plastic manufacturing companies. Based on the findings, the study therefore rejects the null hypothesis three (H_{02}), which states that material material handling has no positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State in Nigeria.

Hypotheses Three

H_0: Material procurement strategy has no positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria

H_{01}: Material procurement strategy has a positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria

Result of Pearson product-moment correlation analysis between E-service quality responsiveness and user satisfaction

Correlations

		Material Procurement Strategy	**Organizational Productivity**
Material Procurement Strategy	Pearson Correlation	1	.813**
	Sig. (2-tailed)		.000
	N	300	300
Organizational Productivity	Pearson Correlation	.813 **	1
	Sig. (2-tailed)	.000	
	N	300	300

****. Correlation is significant at the 0.05 level (2-tailed).**

Source: Field Survey, 2022

Interpretations

The correlation in Table 25 shows that there is a significant relationship between material procurement strategy and organizational productivity. The Pearson's product moment correlation coefficient values reveal a strong positive and significant correlation between material procurement strategy and organizational productivity ($r = 0.813$, at $p<0.05$). This implies that an increase in material procurement strategy will increase organizational productivity in plastic manufacturing companies. Based on the findings, the study therefore rejects the null hypothesis four (H_{04}) which states that material procurement strategy has a positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria.

Summary of Findings

1. Material planning strategy has a significant relationship with organizational productivity in plastic manufacturing companies in Anambra State.
2. Material handling has a positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State in Nigeria.
3. Material procurement strategy has a positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria.

CONCLUSION

This work examined the relationship between material management and organizational productivity of plastic manufacturing companies in Anambra State. Data generated from the selected plastic manufacturing companies were tested, using Pearson Product Moment Correlation Coefficient. Material planning strategy has a significant relationship with organizational productivity. Material handling has a positive significant relationship with organizational productivity. Material procurement strategy has a positive significant relationship with organizational productivity in plastic manufacturing companies in Anambra State, Nigeria. Therefore, the study concluded that material management has a positive significant relationship with organizational productivity.

RECOMMENDATIONS

Based on the findings and conclusion the following recommendations were made:

1. There should be proper planning of material management practices right from the inception of project execution and should also be practiced on all sites and by all categories of construction companies, whether large, medium or small so as to ensure timely project execution and standard work delivery within reasonable cost, time and quality.
2. Plastic manufacturing companies operating in Nigeria should prioritize in investing on modern systems of material handling equipment that will enhance efficiency and effectiveness production.
3. Every organizations should adopt the use of information technology, that will not only help in information sharing, but also will help in proper procurement procedure of material from suppliers hence improving the material usage.

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